NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

WASTE UTILIZATION

(ac.)
CODE 633

DEFINITION

Using agricultural wastes such as manure and wastewater or other organic residues.

PURPOSE

Protect water quality.

Protect air quality.

Provide fertility for crop, forage, fiber production and forest products.

Improve or maintain soil structure.

Provide feedstock for livestock.

Provide a source of energy.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where agricultural wastes including animal manure and contaminated water from livestock and poultry operations; solids. and wastewater from municipal treatment plants; and agricultural processing residues are generated, and/or utilized.

Significant amounts of pesticides, petroleum products, and other nonplant or animal products must be excluded from the wastes covered by this standard.

CRITERIA

All federal, state, and local laws, rules and regulations shall be strictly adhered to. Laws and regulations of particular concern include those involving waste management, health and safety, water and drainage rights, land use, pollution abatement, property easements, wetlands, preservation of cultural resources, and endangered species. By law, wetlands, as well as lakes, streams, and aquifers must be protected from pollution.

Where municipal wastewater or solids are land applied, additional requirements in Administrative Rules of South Dakota 74:52:09:01 must be met.

The owner or operator shall be responsible for securing all required permits or approvals related to waste utilization, and for operating and maintaining any components in accordance with applicable laws and regulations.

Use of agricultural wastes shall be based on at least one analysis of the material during the time it is to be used. In the case of daily spreading, the waste shall be sampled and analyzed at least once each year. As a minimum, the waste analysis should identify nutrient and specific ion concentrations. Where the metal content of municipal wastewater, sludge, seepage, and other agricultural waste is of a concern, the analysis shall also include determining the concentration of metals in the material.

When agricultural wastes are land applied, application rates shall be consistent with the requirements of the Natural Resources Conservation Service (NRCS) conservation Practice Standard for Nutrient Management (590).

Routine stockpiling of waste outside the animal production facility shall be done only at a designated stockpiling site (see standard for Waste Storage Facility (313)) and must be done in accordance with South Dakota Department of Environment and Natural Resources (SD DENR) permit requirements.

Where agricultural wastes are to be spread on land not owned or controlled by the producer, the waste management plan, as a minimum, shall document the amount of waste to be transferred and who will be responsible for the environmentally acceptable use of the waste.

Records of the use of wastes shall be kept a minimum of five years as discussed in Operation and Maintenance (O&M) below.

ADDITIONAL CRITERIA TO PROTECT WATER QUALITY

All agricultural waste shall be utilized in a manner that minimizes the opportunity for contamination of surface and ground water supplies.

Agricultural waste shall not be land-applied on soils that are frequently flooded, as defined by the National Cooperative Soil Survey, during the period when flooding is expected.

When liquid wastes are applied, the application rate shall not exceed the infiltration rate of the soil, and the amount of waste applied shall not exceed the moisture holding capacity of the soil profile at the time of application. Wastes shall not be applied to frozen, snow-covered or saturated soil.

ADDITIONAL CRITERIA TO PROTECT AIR QUALITY

Where protecting air quality is a purpose for this practice, incorporate surface applications of solid forms of manure or other organic by-products into the soil within 24 hours of application to minimize emissions and to reduce odors**.**

When applying liquid forms of manure with irrigation equipment, select application conditions where there is high humidity, little/no wind blowing and/or other conditions that will minimize volatilization losses into the atmosphere. The basis for applying manure under these conditions shall be documented in the nutrient management plan.

Handle and apply dry types of animal manure or other organic by-products when weather conditions are calm and there is less potential for blowing and emission of particulates in the atmosphere. The basis for applying manure under these conditions shall be documented in the nutrient management plan.

When sub-surface applied using an injection system, waste shall be placed at a depth and applied at a rate that minimizes leaks onto the soil surface, while minimizing disturbance to the soil surface and plant community.

All materials shall be handled in a manner to minimize the generation of particulate matter, odors, and greenhouse gases.

ADDITIONAL CRITERIA FOR PROVIDING FERTILITY FOR CROP, FORAGE AND FIBER PRODUCTION AND FOREST PRODUCTS

Where municipal wastewater and solids are applied to agricultural lands as a nutrient source, the single application or lifetime limits of heavy metals shall not be exceeded. The concentration of salts shall not exceed the level that will impair seed germination or plant growth.

ADDITIONAL CRITERIA FOR IMPROVING OR MAINTAINING SOIL STRUCTURE

Wastes shall be applied at rates not to exceed the crop nutrient requirements or salt concentrations as stated above.

Residue management practices shall be used for maintenance of soil structure.

ADDITIONAL CRITERIA FOR PROVIDING FEEDSTOCK FOR LIVESTOCK

Agricultural wastes to be used for feedstock shall be handled in a manner to minimize contamination and preserve its feed value. Wastes stored for this purpose shall be covered. A qualified animal nutritionist shall develop rations that utilize wastes.

ADDITIONAL CRITERIA FOR PROVIDING A SOURCE OF ENERGY

All energy producing components of the system shall be included in the waste management plan and provisions for utilization of residues of energy production identified.

Where the residues of energy production are to be land-applied, follow criteria listed above.

CONSIDERATIONS

For land application, the effect of waste utilization on the water budget should be considered, particularly where a shallow ground water table is present or in areas prone to runoff. Limit waste application to the volume of liquid that can be stored in the root zone.

Agricultural wastes contain pathogens and other disease-causing organisms. Wastes should be utilized in a manner that minimizes their disease potential.

Priority areas for land application of wastes should be on gentle slopes (less than four percent) located as far as possible from waterways conveyances or water bodies. When wastes are applied on more sloping land or land adjacent to water conveyances such as waterways, other conservation practices should be installed to reduce the potential for offsite transport of waste.

It is preferable to apply wastes on pastures and hayland soon after cutting or grazing before re-growth has occurred.

Volume and nutrient content of wastes may be reduced by processing in treatment lagoons, waste digesters, composting systems, constructed wetlands and/or other treatment systems.

Consider the net effect of waste utilization on greenhouse gas emissions and carbon sequestration.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall meet this standard and shall include requirements needed to achieve its purpose. The waste management plan must account for utilization or other disposal of all animal wastes produced. All waste application areas shall be clearly indicated on a plan map.

OPERATION AND MAINTENANCE

The O&M Plan shall include dates of periodic inspection and maintenance of equipment and facilities used in waste utilization. The plan should include what is to be inspected or maintained.

Records shall be kept for a period of five years or longer, and include when appropriate:

Quantity and nutrient content of manure and other agricultural waste produced.

Soil test results for land application.

Dates and amounts of land applied waste, and dates and amounts of waste removed from the system due to feeding, energy production, or export from the operation.

Describe climatic conditions during waste application such as: time of day, temperature, humidity, wind speed, wind direction and other factors as necessary.

Waste application methods.

Crops grown and yields (both yield goals and measured yield).

Other tests, such as determining the nutrient content of the harvested product.

Calibration of application equipment.